

SERVICING THE GE ADVANTX R/F SYSTEM

Course Length: 2 Weeks
CEUs Awarded: 8

Introduction

The GE Advantx RF Systems course is a skills development course designed to provide the experienced service professional with the skills necessary to fully service and calibrate this control.

Prerequisites

To attend this course, the service professional must have a good understanding of the principles gained through attending Phase II and Phase III or four years equivalent experience in servicing RF equipment. The service professional must also possess a good working knowledge of microprocessors and their associated support chips.

Objectives

At the conclusion of this course, participants will be able to:

- Perform complete calibration of the GE Advantx X-ray control, image chain, and peripheral equipment
- Evaluate system performance
- Troubleshoot the majority of the system to component level
- Perform CDRH testing on the GE Advantx system

Course Outline

DAY 1

- I. Introduction
 - A. Basic operation
 1. Knology
 2. Software controls
 3. Operation
- II. Using GE documentation
 - A. Manual layout
 - B. Signal tracing
 - C. Getting from unit to unit
- III. Block diagram
 - A. Modular structure
 - B. System architecture

Lab Activities

- I. System operation
- II. Physical layout
- III. Component location
- IV. Software loading
 - A. Restore
 - B. Back-up
- V. Service mode

DAY 2

- I. On-off circuits
- II. Power-up sequence
- III. kV control
 - A. kV control block diagram
 1. Voltpac drive
 2. Feedback circuitry
 3. Limit circuitry
 4. Compensation circuitry
 - B. Calibration
- IV. Primary contacting
 - A. Force commutation
 - B. Pre-contacting control
- V. HT transformer

Lab Activities

- I. kV calibration
 - A. Load/slope
 - B. Servo boost
 - C. Pre-contacting

- D. Damping
- E. Internal kV metering
- II. Waveform analysis

DAY 3

- I. Filament control
 - A. Drive signals
 - B. Oscillator circuit
 - C. Chopper circuit
 - D. Metering
- II. Real mA feedback
 - A. Mid-secondary circuitry
 - B. mA stabilization
 1. Filament drive correction
 2. CPU update

Lab Activities

- I. mA calibration
 - A. Baseline
 - B. Space charge
 - C. Feedback
 - D. Overdemand
 - E. Auto/manual
 - F. Waveform analysis

DAY 4

- I. Timer
 - A. Timing sequence
 - B. HV on detection
- II. Exposure Logic
 - A. Prep cycle
 - B. Exposure release logic requirements
 - C. Exposure stop
- III. Rotor controller
 - A. Power control
 1. Initial turn on
 2. Start to run
 3. Brake
 - B. Inverter drive
 1. Frequency
 2. Modulation
 - C. Microprocessor
 1. Communication
 2. Error LEDs

continued

Advanced Specialty Products Systems Maintenance

SERVICING THE GE ADVANTX R/F SYSTEM *CONTINUED*

Course Length: 2 Weeks
CEUs Awarded: 8

Lab Activities

- I. Timer calibration
 - A. Tailing compensation
 - B. Anticipation time
- II. Rotor controller
 - A. Waveform analysis
 - B. Calibration

Day 5

- I. MPPU X-Ray control
 - A. High frequency concepts
 - B. DC supply
 - C. Double "H" bridge
 - D. Test points
 - E. Monitoring circuits

Lab Activities

- I. X-ray control troubleshooting
- II. Week 1 lab review

DAY 6

- I. Automatic exposure control
 - A. Ion chamber select
 - B. Master density
 - C. Screen compensation
 - D. Photo cell calibration
- II. Fluoroscopic control
 - A. Standard fluoro
 - B. Digital fluoro
- III. Photospot control
- IV. Cine control

Lab Activities

- I. AEC calibration
 - A. Master density
 - B. Screen speed
 - C. Fine density tweak
 - D. Anticipator calibration
- II. Photo cell calibration
- III. Waveform analysis

DAY 7

- I. VIC module part 1
 - A. Power supply module
 - B. II control
 1. Grid drives
 2. Drive feedback
 3. Anti "S"ing control
 4. Photo cathode current
- C. High voltage supply
- D. Image gate
- E.. Neutral density filter

Lab Activities

- I. Beam evaluation
- II. Electronic II focus
- III. Mechanical focus
- IV. Image tube evaluation
 - A. Contrast ratio
 - B. Resolution

DAY 8

- I. VIC module part II
 - A. Camera head
 1. Camera controls
 2. Camera tube voltages
 - a. Grid drives
 - b. Grid voltage feedback
 - B. Iris control
 - C. TV rotator
 - D. Video processor

Lab Activities

- I. Calibration
 - A. Camera
 1. Electronic focus
 2. Mechanical focus
 3. Target voltage
 4. Pre-amp
 - B. Iris
 - C. Video processor
 1. Peak video
 2. Extended dynamic range
- II. Waveform analysis

DAY 9

- I. Control console
 - A. Plasma screen
 - B. Power supplies
 - C. Console μ P
- II. Spot filmer 8835
 - A. Interface
 - B. Control
- III. Collimator
 - A. Interface
 - B. Control
- IV. System variations
 - A. Positioner
 1. Rad
 2. Rad/fluoro
 3. Vascular
 - B. Collimators
 - C. "C" Arms
 - D. Tables

Lab Activities

- I. Spotfilmer calibration
- II. Collimator calibration
- III. System Wide troubleshooting

DAY 10

- I. System review
- II. Final exam
- III. Course evaluation